



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,946	01/15/2002	Carl E. Cupit	CUPIT001	2439
7590	08/10/2005		EXAMINER	
Richard L. Moseley P.O. BOX 63078 HOUSTON, TX 77263			WACHTEL, ALEXIS A	
			ART UNIT	PAPER NUMBER
			1764	
				DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/045,946	CUPIT, CARL E.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Alexis Wachtel	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 23 May 2005.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-10 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_.

***Detailed Action***

***Response to Amendment***

1. Applicant's amendment, affidavit and accompanying remarks filed 5-23-05 have been entered and carefully considered.

The amendment and affidavit are sufficient to overcome the anticipation rejections of claims 1-9. The affidavit has been found to be persuasive and has overcome the 112 2<sup>nd</sup> paragraph rejections of claims 4-9. Claim 10 was added for consideration. However, an updated search yielded new prior art that provides a new basis of rejection as shown below. Applicant's arguments are rendered moot in view of the new grounds of rejection.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,176,052 to Bruce et al in view of US 5,099,124 to Benson.

With respect to claim 1, Bruce et al teach a level system for detecting a foam level in a delayed coking drum comprising:

(a) a plurality of radiation detectors mounted length wise along the height of the coke drum (Col 9, lines 9-19);

(b) a radiation source mounted on the coke drum opposite said radiation detectors (Col 8, lines 31-40);

Bruce et al do not teach the use of linear radiation detectors or that said linear radiation detectors are calibrated to read one hundred per cent level when no radiation is detected. Benson et al is directed to level detection means and teaches the use of radiation source tube (20) that can be placed opposite of a linear radiation detector array (22) (Col 6, lines 9-36) and whereby a plurality of such linear detectors can be used (Fig.1, items 22a-e). Said linear detectors are useful for measuring levels of a hydrogen containing substance (Col 1, lines 7-12). Said linear detectors are connected by to an electronic console (26a) by high voltage leads (24a-e). Electronic console supplies high voltage to linear detectors (22a-e) and processes signals from detector tubes into a voltage or current proportional to the count rate produced in each detector tube in response to slow neutrons detected in each of detector tubes. When all detector tubes (22a-e) are functioning and outputs from each are summed by electronic console (26a), stacked detector tubes function as one detector tube. By providing a means of selectively and independently switching detector tubes off and on, much greater precision and accuracy can be achieved (Col 5, lines 5-27). In view of this teaching it would have been obvious to one of ordinary skill to have replaced the level detection scheme taught by Bruce et al with the level detection system taught by Benson. One of ordinary skill would have been motivated by the desire to provide more accurate level detection means inside a coke drum.

With respect to claims 2,3 and 10, the art combination of Bruce et al and Benson renders obvious the claimed radiation detector configuration along the height of a coke drum end to end as well as their operation characteristics.

With respect to claim 4, the combination of Bruce et al and Benson as set forth above teach a method of detecting a foam level in a delayed coking drum comprising:

- (a) placing a plurality of linear radiation detectors along the height of said drum;
- (b) placing a radiation source on said drum opposite said radiation detectors';
- (c) calibrating each of said radiation detectors to read zero per cent level at the radiation count of the detector when only hydrocarbon vapors are present in the drum adjacent to the detectors (Benson, Col 5, lines 5-56);
- (d) calibrating the output each of said radiation detectors to read one hundred per cent when no radiation is detected (Benson, Col 5, lines 5-56);
- (e) detecting radiation as a percentage of the height of each radiation detector as radiation is blocked by the foam level rising in the coke drum (Benson, Col 5, lines 5-56);
- (f) multiplying the percentage reading for each detector by the fraction of height each detector is in relation to the total height of all the detectors to give a product (Benson, Col 5, lines 5-56); and
- (g) summing all of the resulting products to give a foam level (Benson, Col 5, lines 5-56).

With respect to claim 5, wherein the output of each detector is recalibrated after feed is started to read 100 per cent when the radiation count of the next higher detector begins to fall (Benson, Col 5, lines 5-56).

With respect to claim 6, wherein the output of all except the topmost of the radiation detectors are recalibrated after feed is started to read 100 per cent when the radiation count of the next higher detector begins to fall and output of the topmost detector output is recalibrated based upon a linear interpolation of the lower recalibrations (Benson, Col 5, lines 5-56).

With respect to claim 7, wherein the radiation count of each detector is indicated in a distributive control system (Benson, 26a).

With respect to claim 8, wherein the radiation count of each detector is indicated in a computer (Benson, Fig.6). Examiner notes that plot of Fig.6 inherently results from a computer processing detector data, therefore, a computer is inherently indicated on a computer.

With respect to claim 9, the art combination of Bruce et al and Benson as set forth above would inherently be capable of detecting a foam level in a delayed coking drum comprising detecting the boiling mass in the coke drum and accounting for the changing densities of the foam in the drum over the height of the coke drum.

***Prior Art of Record***

4. The prior art of record and not relied upon is considered pertinent to Applicant's disclosure. In addition, the following references are cited for disclosing various aspects of Applicant's invention:

US 4,755,677; US 3,501,632; US 4,727,247; US 4,884,457; US 5,132,917;  
US 5,127,772; US 5,028,311; US 5,667,669; US 4,344,819

**Conclusion**

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Wachtel whose telephone number is 571-272-1455. The examiner can normally be reached on 10:30am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Glenn Caldarola, can be reached at (571)-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Glenn Caldarola  
Supervisory Patent Examiner  
Technology Center 1700